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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,331	01/14/2004	Robert A. Ashworth	040020	3466

7590 09/04/2007  
ROBERT A. ASHWORTH  
2663 TANGLEWOOD DRIVE  
WOOSTER, OH 44691

EXAMINER

BOYER, RANDY

ART UNIT	PAPER NUMBER
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1764

MAIL DATE	DELIVERY MODE
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09/04/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/757,331

Applicant(s)

ASHWORTH, ROBERT A.

Examiner

Randy Boyer

Art Unit

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-13 is/are rejected.
- 7) ☒ Claim(s) 1 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 29 April 2005
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

1. Examiner acknowledges response filed 24 May 2007 containing amendments to the claims and remarks.
2. Examiner acknowledges that the amendments to the claims are sufficient to overcome the previous rejections under 35 U.S.C. 101 and 35 U.S.C. 112, second paragraph.
3. Objection is made with respect to claim 1.
4. New grounds for rejection necessitated by Applicant's amendment to the claims are entered with respect to claims 1 and 3-13. The objection and rejections follow.

### ***Claim Objections***

5. Claim 1 is objected to for lack of antecedent basis in the claim.
6. With respect to claim 1, the claim recites the limitation "the mix section." There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1 and 3-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Ashworth (US 4423702).

9. With respect to claims 1 and 8, Ashworth discloses a method for the removal of sulfur from carbonaceous fuel comprising: (a) introducing a carbonaceous fuel that contains sulfur into a partial oxidation unit operating at a stoichiometric air to fuel ratio of 0.40 to 0.80 (see Ashworth, column 3, lines 35-63; and column 5, lines 8-9), providing a reducing operating condition for high levels of sulfur capture in an alkaline molten fuel ash slag under reducing conditions with carbon, carbon monoxide, and hydrogen as the reducing agents from partial oxidation (see Ashworth, column 4, lines 20-29); (b) introducing an alkali with the fuel or via a separate stream into the partial oxidation unit, the alkali reducing molten carbonaceous fuel ash viscosity and reacting with the sulfur species liberated from the fuel (see Ashworth, column 3, lines 48-63); and (c) separating a fuel gas molten liquid slag following the contact of the fuel gas-molten liquid slag in the mix section while under highly reducing condition, wherein a molten slag mixture comprising an alkali and a sulfur compound is removed to a water quench system (see Ashworth, column 4, lines 20-29).

Ashworth does not explicitly disclose wherein the fuel contains mercury or

wherein the process may be used for the removal of mercury from a carbonaceous fuel.

However, Ashworth discloses wherein the carbonaceous fuel may be coal (see Ashworth, column 3, lines 36-43). Moreover, mercury is known to be an inherent property of coal. Thus, it follows that mercury will *necessarily* be removed with the molten slag mixture of Ashworth's process. When an examiner has reason to believe that the functional language asserted to be critical for establishing novelty in claimed subject matter may in fact be an inherent characteristic of the prior art, the burden of proof is shifted to Applicant to prove that the subject matter not shown in the prior art does not possess the characteristics relied upon. See MPEP § 2112(V) (citing *In re Fitzgerald*, 619 F.2d 67, 70 (CCPA 1980)).

Finally, Examiner notes Applicant's specification at page 3 wherein Applicant admits that "[h]igh levels of mercury capture were found to be an inherent feature of a staged combustor [citing Ashworth (US 4423702)] developed for the reduction of sulfur and nitrogen oxides to the atmosphere." In this regard, the court has instructed "the fact that a characteristic is a necessary feature or result of a prior-art embodiment is enough for inherent anticipation, *even if that fact was unknown at the time of the prior invention*" (emphasis added). See MPEP § 2112(II) (quoting *Toro Co. v. Deere & Co.*, 355 F.3d 1313, 1320 (Fed. Cir. 2004)).

Thus, Examiner finds that Ashworth inherently discloses all the limitations of Applicant's claims 1 and 8.

10. With respect to claims 3 and 9, Ashworth discloses wherein the carbonaceous fuel is coal (see Ashworth, column 3, lines 36-43).

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11. With respect to claims 4 and 10, Ashworth discloses wherein the slag is maintained as a reducing liquid media by performing the partial oxidation at a temperature range 2200°F to 3000°F (see Ashworth, column 3, lines 53-59).

12. With respect to claims 5, 6, 11, and 12, Ashworth discloses wherein the alkali may be limestone, nahcolite, trona, or mixtures thereof (see Ashworth, claim 8).

13. With respect to claims 7 and 13, Ashworth discloses wherein the sulfur compound is captured in a mineral complex that is non-soluble in water (see Ashworth, column 4, lines 20-29). Moreover, Applicant admits that “[h]igh levels of mercury capture were found to be an inherent feature of a staged combustor [citing Ashworth (US 4423702)] developed for the reduction of sulfur and nitrogen oxides to the atmosphere” (see Applicant’s specification at page 3).

### ***Response to Arguments***

14. Applicant's arguments with respect to all claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office Action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Randy Boyer whose telephone number is (571) 272-7113. The examiner can normally be reached Monday through Friday from 8:00 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola, can be reached at (571) 272-1444. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

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USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RPB



Glenn Calderola  
Supervisory Patent Examiner  
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